REMARKS

Claims 1-88 and 90-99 are pending in the application. Claims 1, 3-8, 15-20, 30-31, 35-37, 41-45, 47-49, 59-67, 70-71, 74, 77, 83, 90 and 92 have been amended, and claim 89 has been canceled. No new matter has been added.

Claim Rejections - 35 U.S.C. §112

Claims 3-8, 15, 17-20, 30-31, 35-36, 42-61 and 71-88 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. This rejection is overcome in view of the amendments of claims 3-8, 15, 17-20, 30-31, 35-36, 42-45, 47-49, 59-61, 64-67, 71 and 92 to improve their form.

Also, claims 37, 41, 47, 74, 77 and 83 have been amended to correct inadvertent typographical errors. Claims 1, 42, 62, 70 and 71 have been amended to correct inadvertent grammatical errors.

Claim Rejections - 35 U.S.C. §103(a)

Claims 1-19, 21-22, 24, 27-44, 46-63, 65-68, 70-77, 80-81 and 83-99 were rejected in the outstanding Office Action under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 4,971,806 (Cherukuri) in view of U.S. Patent Application Publication No. 2003/0224090 (Pearce) and U.S. Patent No. 5,149,521 (Hirose). This rejection is respectfully traversed.

Claim 1 requires of a pullulan-free edible film composition comprising an effective amount of a film forming agent and an effective amount of an antimicrobial agent comprising cardamom oil. This composition is not disclosed in the cited art, nor would it have been obvious in view of the cited references taken alone or in combination.

Similarly, claim 42 is directed to a method of oral cleansing using a pullulan-free edible film composition comprising an effective amount of a film forming agent and an effective amount of an antimicrobial agent comprising cardamom oil.

Claim 62 is directed to a method of making a pullulan-free edible film composition comprising an effective amount of a film forming agent and an effective amount of an antimicrobial agent comprising cardamom oil.

Claim 70 is directed to a method of treatment for reducing the number or activity of bacteria in the oral cavity and requires providing an edible film composition comprising cardamom oil in and amount sufficient to kill or deactivate oral bacteria; and causing a person in need of the treatment to consume that edible film composition whereby the bacteria in the oral cavity of the person is reduced or inactivated by the treatment.

Thus each of claims 1, 42, 62 and 70 require an edible film with an effective amount of an antimicrobial agent comprising cardamom oil. Cherukuri discloses chewing gum. The Office Action recognizes that Cherukuri does not disclose edible films, nor cardamom oil. Pearce (even if it can be used as a reference) discloses edible films, but not cardamom oil. Hirose discloses an easily breakable granule, and not an edible film, but does suggest that the granule can include a number of different ingredients used as a flavoring component, and lists cardamom. Thus none of the references teaches the edible film made with an effective amount of cardamom oil.

There is no reason to combine the teachings of Hirose with Pearce to come up with the invention claimed in claims 1, 42, 62 and 70. Cardamom oil is not a typical flavoring material. While it is present in some flavors, it is present at very low levels. The suggestion to use it in the easily breakable granules in Hirose would not make it obvious to use it in the edible firms of Pearce. Hirose does not teach that cardamom oil is a typical flavor oil. While it is true that Pearce suggests that the flavorings that can be used include those known to the skilled artisan, such as natural and artificial flavors, this does not mean that it would have been obvious for someone making edible films of Pearce to look for items that are included in things like easily breakable granules.

Since Cherukuri teaches neither an edible film nor cardamom oil, it cannot supply any motivation to combine the references to come up with the invention of claims 1, 42, 62 and 70. Thus these claims, and the claims that depend on them, are patentable over the cited references.

Claim 71 is directed to a method of oral cleansing by consuming a chewing gum comprising cardamom oil, the cardamom oil being present in an amount effective to be an antimicrobial agent. Claim 90 is directed to a method of oral cleansing by consuming a confectionery product containing an effective amount of

an antimicrobial agent wherein the antimicrobial agent is cardamom oil. While Cherukuri discloses chewing gum , there would be no reason to combine the teachings of Hirose and Cherukuri to come up with the invention of claims 71 and 90. As noted above, just because cardamom is listed as being useful in the easily breakable granule of Hirose does not mean that it is a common flavor ingredient such as would be called for by Cherukuri, and not in amounts that would make it effective as an antimicrobial agent. Thus claims 71 and 90 are patentable over the cited references.

Applicants respectfully assert that the Pearce reference should be removed from consideration as a prior art reference, because Applicants invented the claimed subject matter prior to the disclosure in Pearce. Applicants' invention claims priority to provisional application No. 60/319,498, filed on 8/27/2002. A provisional application can provide the priority date for a non-provisional application filed within one year of the provisional. The Office Action points out that the first paragraph of the specification does not include this claim to priority. However, the claim to priority is included in the Application Data Sheet filed with the application, which is an acceptable method of claiming this priority.

The Pearce reference was published December 4, 2003, after the effective filing date of the present application. According to MPEP § 706.02(f)(1), the provisional applications to which Pearce claims priority can only be used to give Pearce an earlier effective date if the prior applications "properly supports the subject matter used to make the rejections" in compliance with 35 U.S.C. §112. For the non-provisional utility application to be afforded the priority date of the non-provisional application, the specification of the provisional must adequately support the claims of the non-provisional application. *See New Railhead Mfg. v. Vermeer Mfg. Co.*, 63 USPQ2d 1843, 1846 (Fed. Cir. 2002).

The Applicants' claims are fully supported by the specifications of provisional application No. 60/319,498. Therefore, the priority date of the above-referenced application is August 27, 2002. However, the Pearce non-provisional patent application was filed on December 20, 2002, and claims priority to provisional applications No. 60/356,279, filed on February 11, 2002, and to No. 60/368,821, filed on April 4, 2002. These provisional applications do not disclose a pullan-free edible film containing cardamom oil. Copies of the provional applications relied upon by

Pearce are attached hereto. Since the provisional patent applications cited by Pearce do not disclose these features, the priority date for the Pearce features relied upon in the Office action is December 20, 2002, which is later than the Applicants' priority date. Therefore, the Pearce reference should be removed, and the obviousness rejections over Cherukuri in view of Pearce and Hirose should be withdrawn.

Claims 2-19, 21-22, 24, 27-41, 43-44, 46-61, 63, 65-68, 72-77, 80-81, 83-88 and 91-99 depend from claims 1, 42, 62, 70, 71 and 90, and are allowable in view of the amendments and remarks pertaining to those claims.

Claims 20, 45 and 64 were rejected in the outstanding Office Action under 35 U.S.C. § 103(a) as unpatentable over Cherukuri in view of Pearce and Hirose, and further in view of U.S. Patent No. 6,500, 406 (Rajaiah). Claim 23 was rejected in the outstanding Office Action under 35 U.S.C. § 103(a) as unpatentable over Cherukuri in view of Pearce and Hirose, and further in view of U.S. Patent No. 1,056,212 (Puetzer). Claims 25-26 were rejected in the outstanding Office Action under 35 U.S.C. § 103(a) as unpatentable over Cherukuri in view of Pearce and Hirose, and further in view of U.S. Patent No. 5,487,902 (Andersen). Claim 69 was rejected in the outstanding Office Action under 35 U.S.C. § 103(a) as unpatentable over Cherukuri in view of Pearce and Hirose, and further in view of WO99/18940 to Bush Boake Allen Inc. (Bush). Claims 78-79 and 82 were rejected in the outstanding Office Action under 35 U.S.C. § 103(a) as unpatentable over Cherukuri in view of Pearce and Hirose, and further in view of U.S. Patent No. 4,568,560 (Schobel). Each of these rejections is respectfully traversed. Each of these claims is dependent on one of the claims discussed above. First, each of these rejections rely on Pearce as being a prior art reference, which it is not. Second, none of these additional references disclose the use of cardamom oil as a typical flavor ingredient, or suggest that it should be used in an edible firm or chewing gum or a confectionery material. Thus, the deficiency noted in the forgoing with respect to the primary references is not remedied by the additional secondary references. Thus these rejections must also be withdrawn.

The Applicants cannot identify the Puetzer reference. While this reference appears in PAIR, the cited patent number is for a U.S. patent to Pierstien for a tube surfacing device and not an antacid containing urea as stated in the instant Office

Action. Should the Examiner maintain this rejection, the Applicants request that the Puetzer reference be properly identified.

The provisional obviousness-type double patenting rejections are noted. However, since these are only provisional, and the claims in the '921 and '923 applications are not allowed, these rejections will be dealt with if needed later.

The Applicants have made a novel and non-obvious contribution to the art of edible film formulations and chewing gum formulations using cardamom oil as an antibacterial agent. The claims at issue distinguish over the cited references and are in condition for allowance. Accordingly, such allowance in now earnestly requested.

Respectfully submitted,

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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No.

INVENTOR(S)		
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Tony Marion	Pearce	Alpine, UTAH
Terry Vernon	Pearce	Alpine, UTAH

☐ Additional inventors are being named on the _____ separately numbered sheets attached hereto

TITLE OF THE INVENTION (500 characters max)

Advanced Materials

Direct all correspondence to: CORRESPONDENCE ADDRESS

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ENCLOSED APPLICATION PARTS (check all that apply)

☐ Specification Number of Pages 9
☐ Drawing(s) Number of Sheets 9
☐ Application Data Sheet. See 37 CFR 1.76
☐ CD(s), Number
☐ Other (specify)

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT

☐ Applicant claims small entity status. See 37 CFR 1.27.
☒ A check or money order is enclosed to cover the filing fees
☐ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number:
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The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.
☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____

Respectfully submitted,

SIGNATURE Tony M Pearce

Date 8 Feb 02

TYPED or PRINTED NAME Tony M. Pearce

REGISTRATION NO. (if appropriate)

TELEPHONE 801-785-2767 x 202

Docket Number: TMP010

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C. 20231.

Advanced Materials

Elastomeric gel materials, such as those made from Kraton or Septon elastomer extended with mineral or other oils, one type of which is described in my U.S. Patent 5,994,450 which is hereby incorporated by reference, can be foamed by chemical foaming agents or by injecting a gas, for instance carbon dioxide or nitrogen, under high pressure so that the gas and the elastomeric gel dissolve so that when the pressure is reduced, the elastomeric gel is instantly foamed. The quality of foam created using elastomeric gels has excellent qualities including but not limited to feel and durability. In addition, such foams can be recycled more readily than ordinary thermoset polyurethane foams because the elastomeric foams are thermoplastic in nature. The problem with making elastomeric foam in commercially viable thicknesses is that the low viscosity of the melted elastomeric gel allows the bubbles, which create the cells in the finished foam, to coalesce or to migrate out of the melt before the melt can be sufficiently cooled. Elastomeric foams without additives can readily be made in very thin layers, up to about 4 millimeters thick, because the melt can be cooled before the bubble distribution is lost. Commercial applications for 4 millimeter or less thick foam are limited, and many more applications exist for thicker foams.

My invention is a series of methods that can be used singly or in combination to manufacture elastomeric gel foams in thicknesses suitable for commercial applications, without limitation, up to 1 meter thick or thicker. The following are methods and additives that allow the manufacture of thick elastomeric gel foam. In the following disclosures foam means elastomeric gel foam and gel means elastomeric gel as described above.

1. A mold that can be heated and cooled rapidly, containing tubes that transect the finished foam cavity. Said tubes can also be heated and cooled rapidly by means of fluid moving through them or by other means. The mold and tubes can be heated if necessary for the type of foam being produced prior to the melted gel being introduced. If necessary to the type of foam and foaming agent or foaming method, the mold can be held at the heated temperature until the bubbles are distributed in the melted gel as desired whereupon the mold and tubes can be rapidly cooled, cooling in turn the foam before the bubbles can migrate away from the desired even distribution throughout the gel. For combinations of gel formulations and foaming methods or agents that do not require the mold to keep the melted gel at a high temperature, the foamed gel can be cooled as soon as it is placed in the mold by rapidly cooling the mold and tubes as above. When the foam is sufficiently cooled, the tubes can be withdrawn from the foam so the foam can be removed from the cavity or the foam can be withdrawn from the cavity parallel to the tubes.

2. A vacuum can be advantageously applied to the mold of Item 1, above, to assist in maintaining the even bubble distribution during cooling. The vacuum level can be increased and decreased during the molding

cycle as necessary to optimize the quality of the foam. Vacuum levels from only a few millimeters of mercury to full vacuum are effective depending on the gel formulation and the foaming method.

3. Fatty acids, stearamides, or stearyl stearamides including but not limited to Kemamide S can be added to the gel resulting in significantly higher stability in bubble distribution in the melted gel. Preferably in the range of 0.5% to 10%, most preferably 4%, but levels outside this range have significant positive effect.

4. A surfactant, including but not limited to Zonyl FSG or any of a number of other surfactants, can be added to the gel resulting in significantly higher stability in bubble distribution in the melted gel. Preferably in the range of 1% to 5%, most preferably 2%, but levels outside this range have significant positive effect.

5. Emulsifiers including but not limited to mono and diglycerides such as Witconol 150 or Witconol 124, can be added to the gel resulting in significantly higher stability in bubble distribution in the melted gel. Preferably in the range of 1% to 10%, most preferably 4%, but levels outside this range have significant positive effect.

Figure 21 shows a fabric-covered piece of Z-Foam, illustrating the exceptionally high hand (suppleness) of this foam. A preferred gel to use with this method would be 20 parts by weight Septon 4055 by Kuraray of Japan and 60 parts by weight white paraffinic mineral oil such as Duoprime 90 by Lyondell, along with appropriate pigments and anti-oxidants as described in the '450 patent. Typically the gel along with the additives described above is melt blended in an extruder and extruded into the mold or die containing the heating/cooling tubes.

The field of writing utensils such as pens has considerable prior art relating to elastomeric grips, the grip being the area where the fingers squeeze the utensil during writing, drawing, etc. The elastomer provides good friction and also conforms to the fingers and is comfortable. However, there have not been such utensils in the prior art in which the entire pen body or the major part of the pen body is made from elastomer, and particularly not from very soft elastomers such as elastomeric gel materials, including but not limited to those made from Kraton or Septon elastomer extended with mineral or other oils, one type of which is described in the '450 patent. My invention is to make the entire writing utensil body, or the majority thereof, from elastomer, more preferably soft elastomer, most preferably elastomeric gel. The ink and writing tip are as in other pens, and while a floppy pen is embodied in my invention, it is preferred that the ink/tip assembly have some rigidity, or a sleeve over the assembly to provide rigidity. In fact, a standard stick-type ball-point pen can be totally encapsulated or the majority of it encapsulated by the elastomer, wherein the elastomer is essentially a cover, bonded or not, of the interior pen, and be within the bounds of my

invention. Such a cover may be more economical to produce than a full elastomer pen body. Such a covered stick pen is shown in Figure 1. The gel of the pens of Figure 1 are made with the gel of my '450 patent. The pen covers are injection molded by known methods and the pens are slipped into the gel covers by aid of soapy water, which after it dries tends to prevent slip. Alternatively, the stick pen or ink/tip assembly or etc. can be bonded in with adhesive or the elastomer can be overmolded onto the ink/tip assembly or stick pen or etc. In recent times the use of pens with gel ink (a different type of gel than the previously described elastomeric gel materials) has become popular, and the use of a translucent or even opaque rubbery gel as the pen body would be desirable and/or entertaining, particularly to (but not limited to) young people. In some preferred embodiments, the color of a translucent gel pen body can match the color of the gel ink from the pen. Thus for example a set of red, silver, and gold gel pens would write with red, silver, and gold ink, respectively. Such pens would also be desirable in the promotional goods industry, where logos of companies are imprinted. These imprints can be put onto the elastomer itself, onto the interior assembly which would then show through the translucent gel, or on onto the non-majority portion of the pen which is not covered with gel. These writing utensils would also be attractive to adults desiring a soft, grippy utensil where the soft grip is not restricted to a small finger area as in the prior art, or desire the ultra softness of the gels in the '450 patent or other similar gels. A preferred formula for covering pens would be 20 parts by weight Septon 4044 by Kuraray of Japan and 70 parts by weight white paraffinic mineral oil such as Duoprime 90 by Lyondell, along with appropriate pigments and anti-oxidants as described in the '450 patent. The pen body or covering would typically be injection molded by standard methods.

I have invented fun squeeze toys and novelties by taking gel such as but not limited to the '450 gel and making a skin, then filling the skin with a material that when combined with the skin makes fun properties, among which may be included color change, noises, a novel feel, and the ability to deform between the fingers. It is important that the fill material be such that it does not easily get into carpet or otherwise make a mess. One novel feature of the '450 gel and other such gels is that when stretched to any great degree, although pigmented even to the level of opacity, the material becomes translucent and even effectually clear. Thus when the ball is significantly deformed, the fill material shows through the skin. So if the fill material is a different color than the skin, the ball changes color when squeezed or otherwise deformed. In one preferred embodiment, the gel skin is filled with ground gel particles of the same color. When squeezed, the ground material, which is of quite a different appearance than the skin, shows through. This ball has an excellent and novel feel. In a similar embodiment, the ground gel (or other elastomer or fun feeling material of any type) is a different color than the skin, and upon deformation the ball seems to change color (when in reality, the fill is showing through the now near colorless deformed skin). In another embodiment, the fill is made from liquid resin (such as Hercules Regalrez 1018) and Septon in accordance with the '450 patent with a very high level of plasticizer, for example 28 parts by weight to one part of polymer (for Example, Septon 4077). Or the same fill could be made wherein the

liquid resin is substituted by a mixture of mineral oil and Regalrez resin which is hard at room temperature, for example in a 50/50 blend. Again, these resin-gel-filled balls have a very unique feel, and the color change is dramatic if the resin-gel-fill is a different color than the skin. A preferred skin would be 20 parts by weight Septon 4055 by Kuraray of Japan, 20 parts by weight of Septon 4044 by Kuraray of Japan, and 140 parts by weight white paraffinic mineral oil such as Duoprime 90 by Lyondell, along with appropriate pigments and anti-oxidants as described in the '450 patent. The most preferred fill, because it is less expensive and makes fun noises and has a very fun feel, is made from cross-linked, hydrated gums, sugars, starches, or polymers, in the same ilk as Gak by Mattel and Goooz by Jakks Pacific. A most excellent formula of my own invention, which can be used as a stand-alone toy compound or as a fill of the ball or novelty (which can be of any shape), is as follows:

3.77	**Spectrum Guar Gum**
1.98	**Boric Acid**
0.12	**Borax**
0.03	**Xanthan Gum**
0.06	**Sodium Benzoate**
0.03	**Potassium Sorbate**
0.23	**Alum. Lake Colorant**
96	**Water**

Figure 2 shows the ball in a person's hand before squeezing, showing the green skin. The ball has a two-part resin-gel fill, half of which is yellow and the other half red. Figure 3 shows that when the ball is squeezed, it appears to change color to that of the fill. The skin can be made by injection molding or rotational molding. The fill can be made by heat blending in the case of gels, or by mixing in the case of water-based polymers. It is not recommended that a non-cross-linked polymer such as starch-thickened water be used as the fill because, although it is fun to play with, it makes a mess and can stain if the ball ruptures. This product can be made in any shape, such as a ball, a cartoon character, a movie character, a logo for promotional use, a doll, an action figure, etc.

I have found that the '450 gel and other such gels can be made quite tacky by the addition of resins and other sticky or tacky plasticizers. I have discovered and invented that if such gels are made tacky enough, but not so tacky that they are unburdensomely adhesive in nature, fun toys can be made which stick to themselves or to other surfaces (such as the front of a refrigerator) and will peel off without leaving a residue. I have also invented toys made from such tacky gels as illustrated in Figures 4 and 5. Figure 4 shows injection molded toy blocks of various sizes and shapes, and Figure 5 shows alphabet letters. The tacky gel does attract lint and dirt in some environments, but this can be readily washed off. An excellent preferred formula for the tacky gel is 20 parts by weight Septon 4055 by Kuraray of Japan, 20 parts by weight of Septon 4077 by Kuraray of Japan, 140 parts by weight white paraffinic mineral oil such as Duoprime 90 by Lyondell, and 140 parts of a Hercules Regalrez resin (of any of several varieties)

which is hard at room temperature along with appropriate pigments and anti-oxidants as described in the '450 patent. Melt blending to create gel is preferred, as described in the '450 patent.

I have invented another fun type of ball or any other shape toy as illustrated in Figures 6 through 12. The skin is made as in the ball described above. But the fill is much firmer and has a slow rebound. As with the other ball, this ball can be used as a toy or novelty or promotional item, but it can also be used beneficially for exercise or physical therapy and other uses. The fill is made with sufficient resin and insufficient oil and polymer (such as Septon) that it is relatively firm (at least in comparison to the other ball) and does not rebound quickly. A preferred formulation is 10 parts by weight Septon 4077 by Kuraray of Japan, 40 parts by weight white paraffinic mineral oil such as Duoprime 90 by Lyondell, and 140 parts of a Hercules Regalrez resin (of any of several varieties) which is hard at room temperature along with appropriate pigments and anti-oxidants as described in the '450 patent. The oil to resin ratio should be adjusted depending on which resin is selected and the feel (soft or firm) and the rate of rebound (fast or slow) that are desired. Figure 6 shows the fully deformed ball, Figure 7 shows that several seconds after release from deformation the fall is still deformed, and Figure 8 shows that the ball fully returns to its original shape. Figure 9 shows the toy in the form of a stick of various shapes. Figure 10 shows one of these sticks after it has been stretched to three times its original length and then released; the fill writhes and wriggles as it fully returns slowly to shape. Figure 11 shows a doll made with this same technology being depressed; upon release, the doll returns largely to shape in this preferred embodiment over the course of three or four seconds. Figure 12 shows a prototype action figure made with this invention being stretched; it will slowly return to shape much the same way as the prior art "Stretch Armstrong" toy. However, in the event the skin breaks, the elastomer resin-gel fill will not leak out and damage the surroundings as did the corn syrup fill of stretch Armstrong. Manufacturing of items made with this invention is done the same way as with the color-change resin-gel-filled ball described above. This ball or other shape can also be made with other elastomeric or deformable skins. Figures 15 through 17 show a ball of this invention made with a Lycra (stretch Nylon fabric) skin, the functional description of the photos corresponding to that of Figures 6 through 8. In yet another embodiment, since the fill is generally adhesively tacky, the 'skin' can be a coating, including coatings of particulate matter (e.g., talc, microspheres, ground cork) or fibers (e.g., such as those used for fine velvet flocking). In such a case, the coated material adheres to the tacky fill and provides a non-tacky surface for the user.

I have invented a method to make void-filled thermoplastics or thermoset materials or cross-linkable materials. This method consists of fusing or pressing particles of dissolvable or meltable material, filling the voids between the particles with molten thermoplastic, and then dissolving out or melting out the particles. In a preferred embodiment relating to elastomers, rock salt is pressed together in a mold (alternatively, wetted, placed together in the mold to fuse, and dried) and molten thermoplastic elastomer or liquid thermosettable elastomer or cross-linkable elastomer is pumped into the mold. The elastomer fills the interstices

between the salt particles. After cooling or chemically transforming into an elastomer, the part is then removed from the mold and placed in water, and the salt is dissolved out by the water. Where the salt was, voids exist, making a coarse type of foam. This foam, when made with gel of the '450 patent, is very high hand (supple), very stretchable, and very strong. A preferred formula for the preferred gel would be 20 parts by weight Septon 4055 by Kuraray of Japan and 60 parts by weight white paraffinic mineral oil such as Duoprime 90 by Lyondell, along with appropriate pigments and anti-oxidants as described in the '450 patent. A foam of this invention made with relatively fine rock salt is shown in Figure 13. A similar foam, but made with salt pellets in the shape and size of pumpkin seeds, thus having relatively coarse voids, is shown in Figure 14. This invention is very helpful in achieving foam in materials that are difficult to foam by more traditional methods.

Figure 18 shows my invention of a pen/pencil/etc. holder. It is made of gel such as is described in the '450 patent, and any other soft and/or highly stretchy elastomer. A preferred formulation would be 20 parts by weight Septon 4044 by Kuraray of Japan and 60 parts by weight white paraffinic mineral oil such as Duoprime 90 by Lyondell, along with appropriate pigments and anti-oxidants as described in the '450 patent. Injection molding by know standard methods is the preferred manufacturing method. Pens, pencils, exacto knives, scissors, or any other object that would fit, including make-up items, may be placed in the easy-to-expand holes. The size and shape of the holder and the individual holes may be anything functional, and the entire holder need not be filled with holes and may be part of another item.

Figure 19 shows bubbles of my invention. These are the types of bubbles described in my previous provisional application filed 9 September 2001 entitled "Long lasting bubbles", except that I have discovered that the use of invert sugar in my invented poly(vinyl) alcohol formulation can make the bubbles last even longer. A preferred formulation is:

523S Poly(vinyl) Alcohol	4.5
Regular Dawn Dish Detergent	9.0
Distilled Water	40.5
Karo Light Corn Syrup	9.0
Invert Sugar -- KC Products	9.0

Figure 19 shows bubbles sitting on a table that have been sitting there for several minutes. Some last for hours, slowly diminishing in size. Invert sugar is generally considered to be a 50/50 blend of fructose and glucose and is commonly available from major sugar suppliers.

The prior art has orally dissolvable films for purposes such as medicine dosing and dispensing of germ killing mouthwash (the latter being illustrated by Listerine's "Pocket Paks™"). However, my invention is to put powerful good tasting flavors into such dissolvable films for entertainment and enjoyment. The

user simply places a piece of film on his/her tongue or on the roof of their mouth or between cheek and gum or etc. and gets a burst of flavor as the film dissolves. I have also invented the printing of graphics (words, art, photos, or etc.) onto these orally dissolvable flavor films. These graphics are important for use in the promotional industry to promote logos, products, films, etc. I also envision the enabling of advertising on such films in much the same way a magazine has advertisements. I have also invented the making of such films in bright colors to be fun and entertaining to people especially young people. These colors could also be designed to color the tongue intentionally. This printing can be done with non-toxic dyes such as FDA-approved dyes. I have also invented the making of such good-flavor films palatable but sugar free by the addition of sugar free sweeteners such as saccharine, Nutrasweet, or Splenda. Splenda is preferred because heat processing, if desired, does not detract from its taste, and it has been ruled very safe by the FDA. Packaging can be any method, but I have invented the use of fun packaging which dispenses a piece of film at a time by mechanical means. Such dispensers have been used for other flavor products such as PEZ candies. I have also invented putting these films into a continuous roll or tape for the end user to tear off (preferably with perforations at the tear lines), bite off, or dissolve off. I have also invented the use of a strip dispenser, much like the dispensers for a roll of stamps, for dispensing such tapes, preferably with a means to aid in the separation of pieces. I have also invented the making of these films into entertaining shapes or meaningful shapes as opposed to the mundane shapes (such as squares and rectangles) of the prior art. Such shapes could be circles, ovals, stars, animal shapes, character shapes, logo shapes, or shapes meaningful in advertising and promotion, etc. A preferred formulation would include pullulan and gums such as locust bean, xanthan, carageenan, and guar. Also included would be such items as Splenda, polysorbate, glyceryl oleate, flavor (such as strawberry flavored oil or commonly available high-flavor additives), and coloring (such as FD&C dye of the chosen color). The making of such power-flavor films would be done in the same ways and with similar ingredients (except for the flavor and other uniquenesses described above) as is well known in the prior art for medicinal and mouthwash films. The latter is described in pending U.S. patent application: Serial No.: 836474; Series Code: 09; Filed: April 18, 2001.

Digital photographs are often printed on special paper or polymer coated with polyester or other polymers. However, such papers must be made flexible in order to go through the dye sublimation printers for which they are designed. They are also not made to have photographs on both sides. Another drawback is that the polyester or polymer coating is very thin, and thus the photograph can lack depth and luster. Some prior art digital photo print paper of this type has utilized biaxially stretched polyester film as the base onto which to coat the polyester or other polymer thin coating, i.e., the photo-receptive layer. However, the prior art has not utilized biaxially stretched polyester films for the photo-receptive layer. My own prior art pending application calls for printing on self-supporting polymeric structures, including non-drapable biaxially stretched polyester (BSP) films. This works well in white BSP films for many applications, but because the viewer cannot see past the opacity of the white BSP film, photos

printed in such white BSP films are flat and dull, as are other types of color graphics. I have discovered that the use of a clear BSP film which is considerably thicker than the coated films of prior art photo paper as the photo-receptive layer on top of a white substrate provides marvelous color, clarity, detail, and depth to photos and other graphics printed by dye sublimation. In the preferred embodiment, the photo or graphic is printed by means of heat, pressure, and time by any of several dye sublimation methods well known in the art onto a laminate. This laminate consists of a white layer, preferably but not necessarily BSP or biaxially stretched poly(ethylene) naphthalate (BSPN), and a layer of clear BSP or BSPN on one or both sides of the white layer. The thickness or material of the white layer can be any thickness or material that provides reasonable opacity and brightness. For a feeling of durability and quality, the center layer is preferably 0.008 inch thick BNP, but can be much thinner and can be thicker. BNP is known to be made in thicknesses of 0.014 inches. The BSP or BSPN layer can be as thin as .0001 inches, which is considerably thicker than the coatings on prior art paper, but it is preferred that the thickness be 0.001. It is also preferred in some applications, such as scrapbooking and albums, that the BSP or BSPN photo-receptive layers be on both sides of the laminate, which is not seen in the prior art. For example, a heat press 2004 as shown in Figure 20 presses printed transfer paper 2003 onto the laminate 2001 of my invention, which is on press base 2002. After sixty seconds at 350 F and 11 psi, the laminate is removed and a beautiful graphic is embedded in the photo-receptive layer on side 1 of the laminate. The process is then repeated with a new transfer paper with the three-layer laminate of my invention turned over, and when the press is lifted the other side also has a beautiful graphic. When hole-punched and placed in a 3-ring binder, the laminate has a graphic and when turned has another graphic. This eliminates the need for placing photos onto both sides of a punched paper. The durability of the BSP or BSPN also eliminates the need for protective slip covers on the pages. Such graphics can be put in frames or any other place photos are used, or can be used alone if made three-dimensionally stiff, in ways such as are disclosed in my pending U.S. patent entitled Self-Stable Structures for Reception of Dye Sublimation Graphics, Express Mail Label No. EU089434495US, Date of Delivery 12/18/01, which is hereby incorporated by reference. The white or light 'layer' of my invention can be any item, including three-dimensional items, for example a white marble gravestone. There are many white and clear BSP and BSPN films commonly available, from suppliers such as Dupont, Teijin, and Filmquest. Lamination can be done by several methods. The preferred method is to co-extrude the white and clear layers together by means well known in the art. Another means is by adhesive lamination of separately produced clear and white films. Another means is by coextruding an interlayer of polymer onto either the white or clear films or both, then heat laminating the layers together by means well known in the art. For a three-dimensional white 'layer', the clear film could be coextruded with adhesive or a meltable polymer and then applied to the white substrate 'layer'. Any means of lamination is acceptable. Another acceptable embodiment of my invention is to coat the back of a clear BSP or BSPN film with white. For example, flood coating as is commonly known can be used. Or, the clear film can be dye sublimated and then the back can be coated

by the end user with a peel-and-stick white layer or even painted with white. The laminate of my invention can have any number of layers or coatings, provided the photo-receptive layer is BSP or BSPN or other bi-axially stretched polymeric films and is backed directly or indirectly with a white or light layer that makes the sublimated graphic show up acceptably. For a very stiff laminate, for example, two layers of 0.014 inch thick BSP plus one or two clear BSP or BSPN or the like outer layer(s) could be laminated together. This could be used for signage, for example, or for durable recording of wedding photos, or for a photo that could be placed on a desk with only a stick-on stand but no frame. The biaxial stretching is important in that it provides crystallinity to the polymer; otherwise, the transfer paper may stick to the polymer or the polymer may deform under the heat of dye sublimation.

Those skilled in the art will recognize that the examples and embodiments given do not limit my invention. There are many and varied implementations.

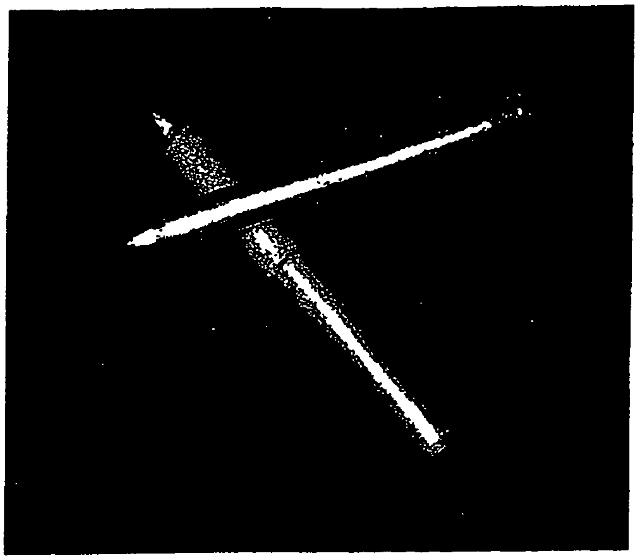
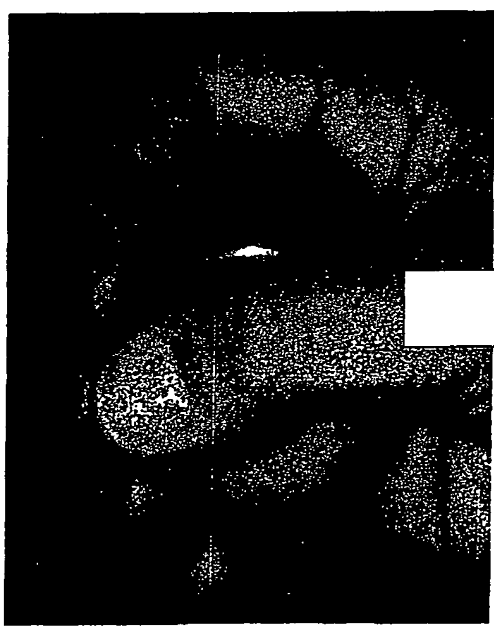


Fig. 1



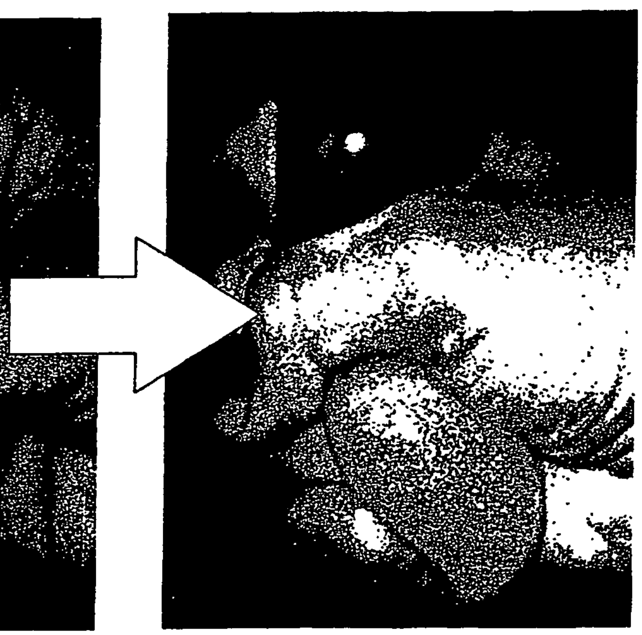


Fig. 2

Fig. 3

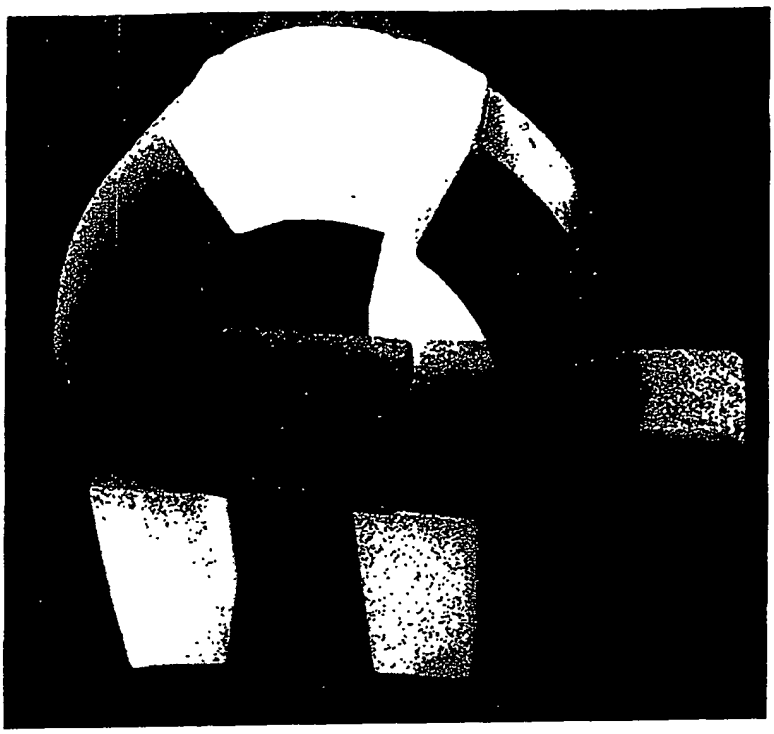


Fig. 4

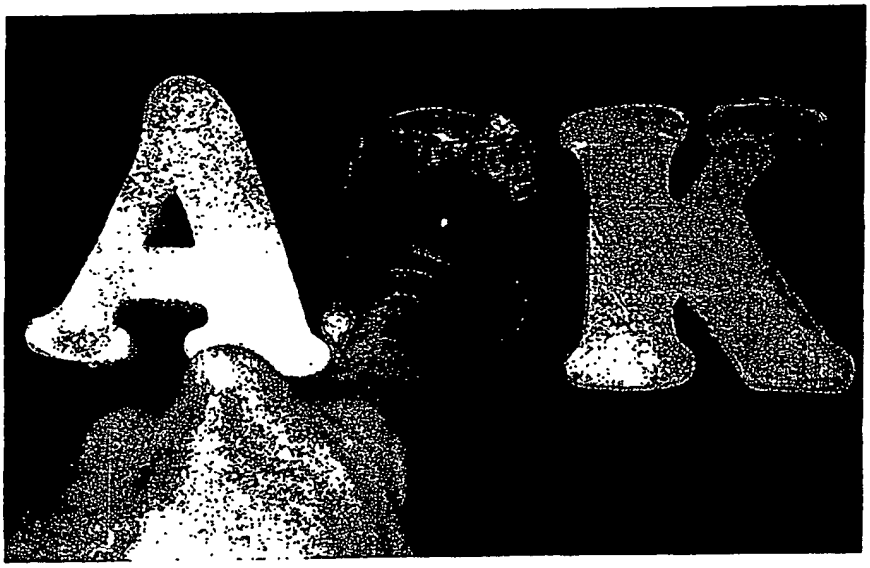


Fig. 5

Fig. 6

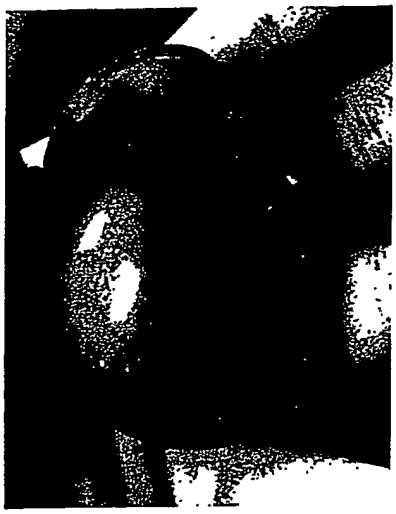


Fig. 7

Fig. 8

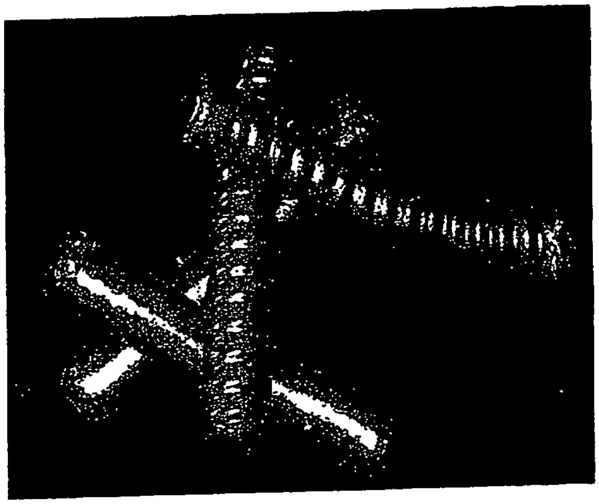


Fig. 9

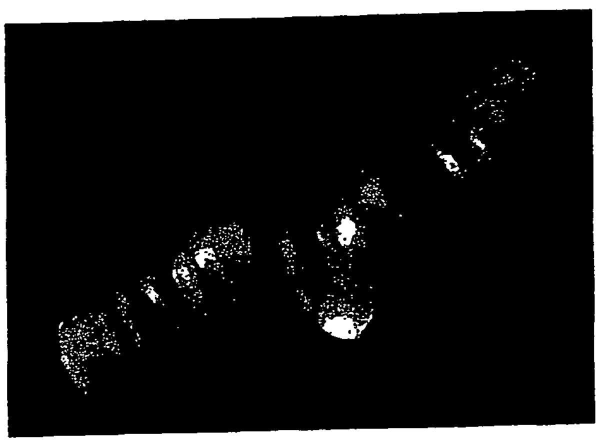


Fig. 10

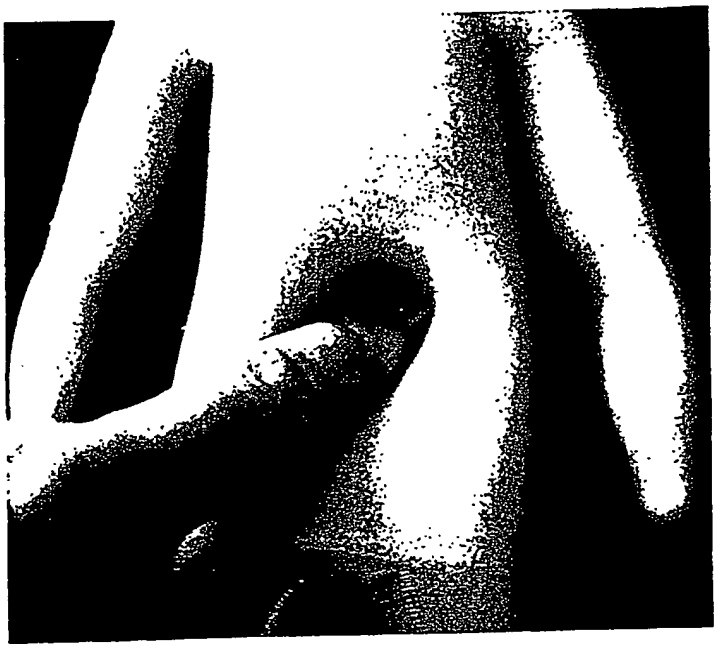


Fig. 11

Fig. 12

Fig. 13

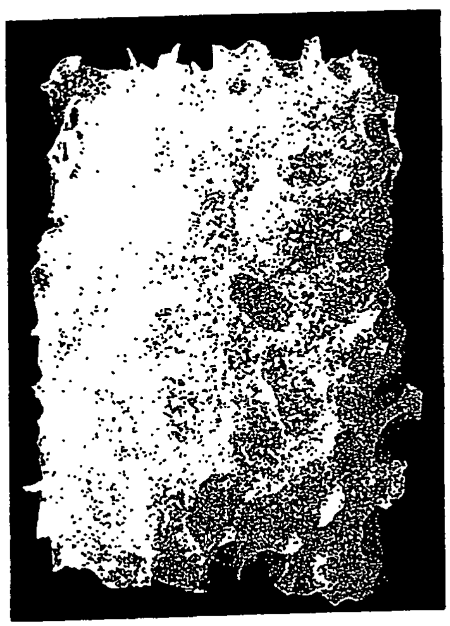


Fig. 14

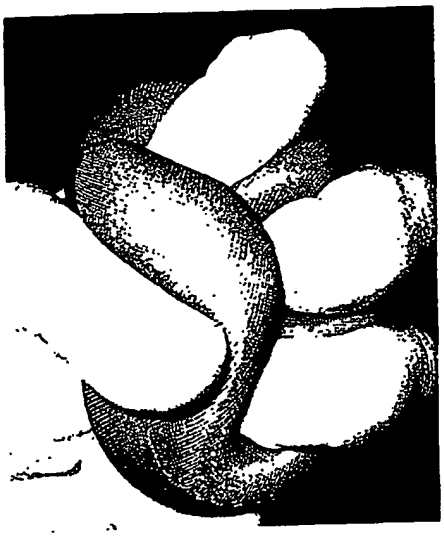


Fig. 15

Fig. 16

Fig. 17

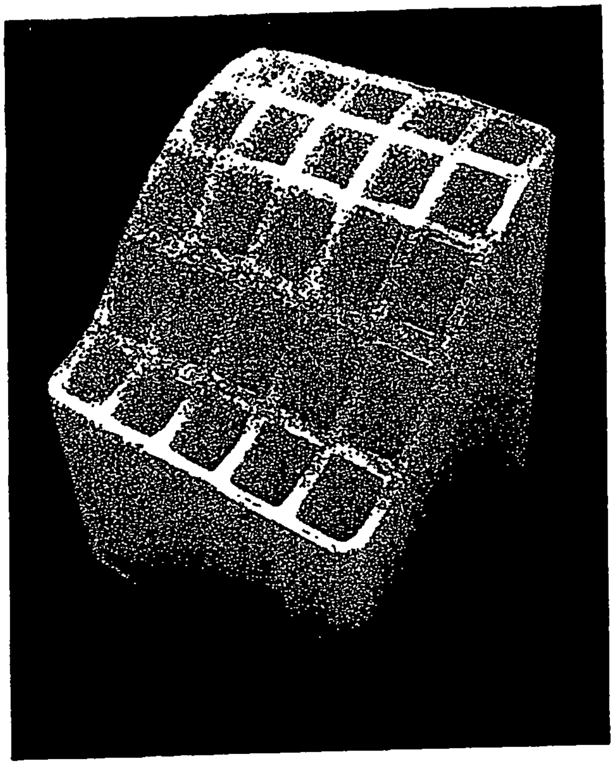


Fig. 18

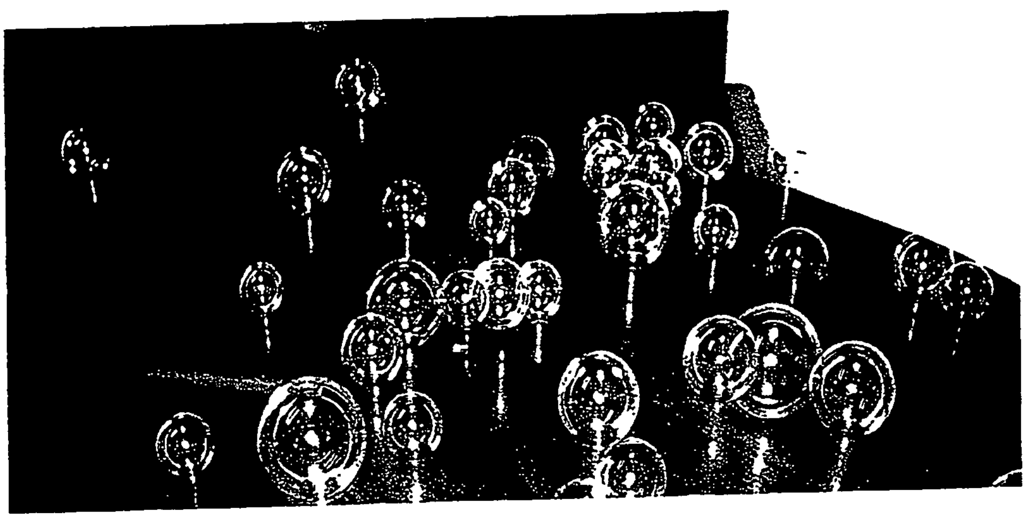


Fig. 19

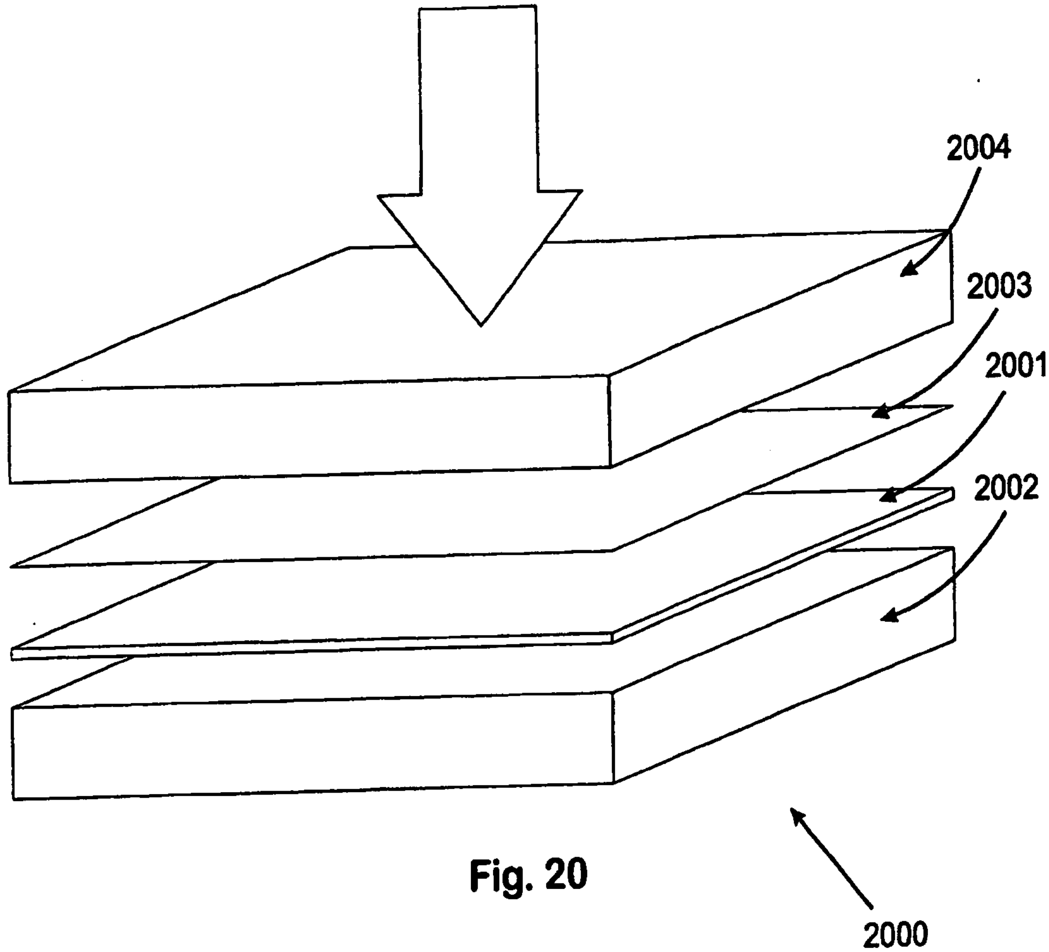


Fig. 20

Fig. 21

Date Mailed: April 1, 2002

PTO/SB/16 (10-01)
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No.

INVENTOR(S)		
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Tony Marion	Pearce	Alpine, UT

☐ Additional inventors are being named on the _____ separately numbered sheets attached hereto

TITLE OF THE INVENTION (500 characters max)

Edible and Non-Edible Materials and Material Configurations

CORRESPONDENCE ADDRESS

Direct all correspondence to:

☐ Customer Number _____ → Type Customer Number here

OR

Place Customer Number Bar Code Label here

☒ Firm or Individual Name	EdiZONE, LC				
Address	220 N. 1300 W. #1				
Address					
City	Pleasant Grove	State	Utah	ZIP	84062
Country USA		Telephone	801-785-2767	Fax	801-785-2611

ENCLOSED APPLICATION PARTS (check all that apply)

☒ Specification *Number of Pages* 5 ☐ CD(s), Number

☐ Drawing(s) *Number of Sheets* ☐ Other (specify)

☐ Application Data Sheet. See 37 CFR 1.76

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT

FILING FEE AMOUNT ($)

☒ Applicant claims small entity status. See 37 CFR 1.27.

☒ A check or money order is enclosed to cover the filing fees

☐ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: _____

☐ Payment by credit card. Form PTO-2038 is attached.

80.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____

Respectfully submitted,

SIGNATURE Tony M Pearce

TYPED or PRINTED NAME Tony M. Pearce

TELEPHONE 801-785-2767 ext. 202

Date 01 APR 02

REGISTRATION NO. *(if appropriate)*

Docket Number: TMP011

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

Edible and Non-Edible Materials and Material Configurations

My U.S. Patent 5,994,450, hereby incorporated in its entirety by reference, describes an elastomeric gel. There are also many other low to medium durometer elastomers in the prior art. We have discovered that it is advantageous to form a cushioning material from these soft elastomers, the '450 gel being preferred, in a unique configuration. This configuration comprises elongated members of any cross sectional shape, for example rectangular in cross section, running reasonably parallel to one another, with a space between the members. Beneath this set of parallel members is another set of parallel members with spaces running at a different angle, so that a given top member and a given bottom member would when viewed from the top form an "X" or a "+". At least some of the intersections between top and bottom members, and preferably all the intersections, would be permanently joined, preferably by being contiguous material, but other means such as adhesives are acceptable. In some instances it would be advantageous to have a porous material, such as fabric or mesh or screen, at the juncture between the top and bottom sets of members, with the joining of intersections being through the porosities of the porous material. This cushioning material can be produced by means well known in the art. For example, and not by way of limitation: A metal mold can be made for the top members by saw-cutting or milling slits in an aluminum or steel plate. A similar mold is made for the top members. Molten '450 gel is poured atop each heated mold and allowed to seep into the slots, then a putty knife is used to scrape off the excess material flush with the surface of the mold. The two molds are then put face to face and the molten material is allowed to join and become contiguous at the intersections. The molds and material in the molds are then cooled. When the molds are taken apart and the gel material removed, the invented is the result. If not all of the molten material is scraped off of one of the molds, and a mesh fabric is put atop the molten material, and then when the molds are put together the mold assembly is put into a press to squeeze out the excess molten gel, then after cooling and removal the invented cushioning material with a mesh fabric at the juncture is the result. It is envisioned that this cushioning material can be made in continuous roll goods by placing the molds on opposing conveyor belts which go through heating and cooling zones, the liquid elastomer (cross-linkable thermoset or molten thermoplastic) and optionally continuous porous material being placed between the opposing molds at the advantageous place in the system. The invented cushioning material is useful in a myriad of cushioning types, including floor mats, knee pads, shoe insoles and other foot care products, seat cushions, mattresses, etc.

I have also invented a toy system which allows the player to exhibit creativity and entertain himself or herself while creating art. This comprises individual pieces which can be joined together. Such are well known in the art, such as Lincoln Logs and, more particularly applicable, Legos. My invention is to put an electronic circuit and a light source, such as a LED, into each piece so that when

connected, it completes an electronic circuit and lights up. The power source can be within each piece, however, since this would be expensive, it is preferred that there be a central power source such as a base containing a battery or a plug for an electrical outlet. The battery could be rechargeable or replaceable.

I have also invented an edible or body-absorbable material comprising foamed film forming edible or body-absorbable polymers, especially but not limited to foamed gums or starches, mixed together with one or more materials to be delivered to the oral cavity or other body part in which the material is to be delivered. The material can be a confection, a drug delivery system, a breath freshener, a germicide to aid in elimination of bad breath, or any other edible system. The film forming polymers include but are not limited to curdlan, xanthan gum, guar gum, pullulan, polyvinyl alcohol, polyvinyl pyrrolidone, hydroxypropylmethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethyl cellulose, sodium alginate, polyethylene glycol, tragacanth gum, acacia gum, arabic gum, polyacrylic acid, methylmethacrylate copolymer, carboxyvinyl polymer, amylose, high amylose starch, hydroxypropylated high amylose starch, dextrin, pectin, chitin, chitosan, levan, elsinan, collagen, gelatin, zein, gluten, soy protein isolate, whey protein isolate, casein and mixtures thereof. Other ingredients are added to fulfill the purpose of the edible material. For example, medicaments, breath fresheners, salt, germicides, sweeteners, flavors, saliva promoters, and the like as are well known in the confection art relating to such items as breath mints, cough drops, hard candies, and edible films or mucous-membrane-soluble films. Still other ingredients can be added to enhance the producibility of the material or the properties, such as other edible gums and starches for affecting the solution properties, surfactants and emulsifiers to help oil-based medicaments and flavor blend in, foam enhancers and initiators, plasticizers, and the like. Certain film forming polymers are preferred, such as pullulan and high amylose starch, because they are excellent film formers, have good mouth feel, and are bland in flavor so they do not interfere with the preferred flavor additives. Excluded from my invention are the use of medicaments in steam-expanded starch, as found in pending U.S. application 2002/0034542, hereby incorporated in its entirety by reference, and prior art exterior-coated expanded starch confections (as opposed to my invention in which the flavor is mixed in), as found in prior art confections such as cheese-coated puffs. However, I do not exclude from my invention expanded starch confections which are coated but also include flavors or salt or etc. mixed in with the foamed polymer. Example 1: 30 grams of distilled water, 30 grams of pullulan (PF-20 by Hayashibara of Japan), 3 grams of citric acid, 0.5 grams of liquid water-based tripleberry flavor from Flavors of North America, 0.3 grams of Sunnett brand acesulfame potassium, and ten drops of red food coloring are heated together in a beaker until the pullulan and citric acid are completely solvated, a temperature approaching the boiling point. 2.5 grams of baking soda are then added, which react with the citric add and/or heat to form carbon dioxide bubbles. A foam results. When cooled and dried, it is a very tasty crunchy confection that after being chewed forms a pleasant filmy syrup in the mouth that

causes the flavor to linger. This confection is fat free and sugar free, an advantage to health conscious people, yet it provides excellent satisfaction. Example 2: Same as Example 1 except glycerin or polyethylene glycol is added as a plasticizer. The more that is added, the chewier and less crunchy the resultant confection is. Example 3: A twin-screw extruder is used to extrude the confection of Example 1 (minus the baking soda), and the water becomes steam and foams the extrusion. Less citric acid is used since none is needed to react with the baking soda. Example 4: The tripleberry flavor is replaced with mouthwash ingredients (breath fresheners, germicides, etc.) such as those used in the non-foamed films of pending U.S. patent application 2001/0022964 A1, hereby incorporated in its entirety by reference. The result is a foam which dissolves to kill germs in the mouth to prevent or cure bad breath and leaves the mouth feeling freshened as though having just gargled with mouthwash. Example 5: The methods of pending patent 2002/0034542 are used to create an edible starch foam, except that instead of a medicament, cheese or cheese flavoring, salt, sweetener, and Molly McButter (an artificial butter flavoring also containing salt) are thoroughly mixed in with the starch and water and other foam forming ingredients. The foam is then create by steam expansion in an extruder as taught in 2002/0034542. The result is a tasty snack, which is either low fat or fat free depending on whether cheese or cheese flavoring is selected. Example 6: Same as example 5, except that the cheese or cheese flavoring, salt, and Molly McButter are replaced by Gold Coast brand Art. WATERMELON Powder and additional sweetener. The result is a tasty fruity snack which can be briefly chewed for satisfaction before it begins to dissolve into a pleasant syrup. Example 7: ReNEW pellets are purchased from Starchtech, Inc. of Golden Valley, Minnesota. These pellets are intended for use in a twin screw extruder to make starch-based biodegradable packaging 'peanuts'. To these pellets, which contain starch, water, and other ingredients useful in making flexible, tough 'peanuts', add apple flavoring, Molly McButter, Sunnett sweetener, citric acid, and cinnamon oil and extrude the 'peanuts'. The result is a fat free, sugar free snack tasting like baked apples with cinnamon. There are limitless possibilities for combinations of polymer type, flavor, crunchy vs. chewy vs. dissolvable, etc. It is also possible, and part of my invention, to put ingredients into the foam or both into and on the foam which, when combined with the saliva of the mouth during ingestion, effervesce. The flavors can include but are not limited to candy flavors, mint flavors, spice flavors, and food flavors which simulate foods dieters crave, such as meat flavors, vegetable flavors, dessert flavors, gravy and sauce flavors, etc.

I now refer to my pending U.S. provision patent application serial number 60/356,279. In that patent application, the following is disclosed: "The prior art has orally dissolvable films for purposes such as medicine dosing and dispensing of germ killing mouthwash (the latter being illustrated by Listerine's "Pocket Paks™"). However, my invention is to put powerful good tasting flavors into such dissolvable films for entertainment and enjoyment. The user simply places a piece of film on his/her tongue or on the roof of their mouth or between cheek

and gum or etc. and gets a burst of flavor as the film dissolves. I have also invented the printing of graphics (words, art, photos, or etc.) onto these orally dissolvable flavor films. These graphics are important for use in the promotional industry to promote logos, products, films, etc. I also envision the enabling of advertising on such films in much the same way a magazine has advertisements. I have also invented the making of such films in bright colors to be fun and entertaining to people especially young people. These colors could also be designed to color the tongue intentionally. This printing can be done with non-toxic dyes such as FDA-approved dyes. I have also invented the making of such good-flavor films palatable but sugar free by the addition of sugar free sweeteners such as saccharine, Nutrasweet, or Splenda. Splenda is preferred because heat processing, if desired, does not detract from its taste, and it has been ruled very safe by the FDA. Packaging can be any method, but I have invented the use of fun packaging which dispenses a piece of film at a time by mechanical means. Such dispensers have been used for other flavor products such as PEZ candies. I have also invented putting these films into a continuous roll or tape for the end user to tear off (preferably with perforations at the tear lines), bite off, or dissolve off. I have also invented the use of a strip dispenser, much like the dispensers for a roll of stamps, for dispensing such tapes, preferably with a means to aid in the separation of pieces. I have also invented the making of these films into entertaining shapes or meaningful shapes as opposed to the mundane shapes (such as squares and rectangles) of the prior art. Such shapes could be circles, ovals, stars, animal shapes, character shapes, logo shapes, or shapes meaningful in advertising and promotion, etc. A preferred formulation would include pullulan and gums such as locust bean, xanthan, carageenan, and guar. Also included would be such items as Splenda, polysorbate, glyceryl oleate, flavor (such as strawberry flavored oil or commonly available high-flavor additives), and coloring (such as FD&C dye of the chosen color). The making of such power-flavor films would be done in the same ways and with similar ingredients (except for the flavor and other uniquenesses described above) as is well known in the prior art for medicinal and mouthwash films. The latter is described in pending U.S. patent application: Serial No.: 836474; Series Code: 09; Filed: April 18, 2001." In this provisional application I add the following aspects to the invention and the following further inventions relating to flavor films. I have discovered that polyethylene glycol is an excellent plasticizer for the films that does not have problems with hygroscopicity. I have also discovered that, unlike the teaching in prior art patents and pending patents, a pullulan film can be made without the use of thickeners such as locust bean gum and xanthan gum. In fact, the resultant film dissolves more quickly and thoroughly. An example of a formulation for an excellent flavor film of my invention is as follows: 23 grams distilled water, 7 grams PF-20 pullulan, 0.15 grams Atmos 300 as a surfactant, 0.12 grams Sunnett sweetener, 0.1 grams citric acid, 1.5 grams Carbowax 300NF polyethylene glycol, 0.3 grams cinnamon oil, and 0.3 grams of red food coloring. The cinnamon oil in this example can, of course, be replaced with any other flavoring. I have also invented the making of orally dissolving films that have a three-dimensional shape, which can be

accomplished by many means including post-forming of a film. I have also invented the making of such a film in such a way that it would effervesce when contacted with saliva. Constructing the film in such a way that baking soda and citric acid dissolve and have a chemical reaction is one way of accomplishing this. As examples, the baking soda can be in the dry film and the citric acid can be in a coating on the film. Or, two layer films could be employed, one with each ingredient. I have also invented multi-colored films for the delight of children and others. This could for example be accomplished with multiple feed stocks in the film making apparatus. I have also invented the use of two different types of films in one film, for examples, the film could be a raspberry film and contain stripes of white film which had a creamy flavor, thus a raspberries and cream effect could be obtained. Again, this could be accomplished with multiple feed stocks in the film making apparatus. Or the raspberry can be in one layer, and the cream in another layer, in a two layer film, as an example. Methods of making multiple layer films include coextrusion, successive casting, etc. I have also invented the inclusion in such films of fats or fat flavorings to enhance the satisfaction of the consumer. Molly McButter is an excellent additive as a butter simulant. I have also invented the use in films of non-candy, non-breath-freshening flavors as an aid to dieters. The flavor industry has artificial and/or natural flavorings for hundreds of kinds of foods, such as various meats, vegetables, desserts, etc.

I have invented another confection which consists of a flavored water-based gel that when chewed tends to slither around and create a fun snack. This consists of a gum and water gelled to a highly rubbery consistency, plus flavors, sweeteners, and the like. My preferred formulation is 70 parts distilled water, 1 part konjac gum, and 1 part iota carageenan. The mixture is stirred and heated to 180 F, then cast hot into sheets or molds or etc.. In place of water, real fruit juice can be used, augmented by other flavors if desired.

Those skilled in the art will recognize that the examples and embodiments given do not limit my inventions. There are many and varied implementations.